

Residential Design Process

Version: September 2023
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Policy Number: SOP-RO-004
File Name: SOP-RO-004 Residential
Design Process_v1 SEP2023

1. Purpose

This SOP outlines the process design follows beginning from the sales handoff after a signed contract and ending at the material takeoff just before ordering materials. It is intended to define and clarify the major steps and triggers that are used to move the design process forward.

2. Responsibilities

- Sales Representative (Sales Rep)
 - Create new project folders, upon receipt of signed contract.
 - Upload all pertinent files and information to project folders, upon receipt of signed contract.
 - Handoff project to PM upon signed contract.
 - Gather and provide essential details to PM and design.

- Project Manager (PM)
 - Act as point of contact with customer during the design process.
 - Initial meetings to detail upcoming processes and timeframes.
 - Schedule site visits.
 - Communicate design changes.
 - Obtain customer approval for design and design changes.
 - Coordinate and execute comprehensive site visit.
 - Upload photos and documents as per design team requirements.
 - Handoff project site eval to design.
 - Handoff project to service coordinator upon final design customer approval.

- Designer
 - Review the site eval provided by the PM.
 - Provide site eval recap to the PM and Sales Rep noting findings.
 - Develop detailed design plans for the residential PV Solar and/or Energy Storage system.
 - Actively communicate status of the project design to the PM and Sales Rep.
 - Resolve design issues in a timely manner.
 - Upload complete design to project folder.
 - Handoff final plans to PM for customer approval.
- Service Coordinator (SC)
 - Apply for permits and approvals related to system installation.
 - Notify team upon receipt of approved permits and utility approval.
 - Handoff project to PM upon receipt of approved permits and utility approval.
- Material Takeoff Specialist
 - Create and upload the electrical and solar bill of materials (BOM) to the project folder.
 - Notify Warehouse Manager and PM of completed BOM's.
- Warehouse Manager (WM)
 - Source, order, receive, & stage project materials.

3. Procedure and Work Instructions

This is an outline of the major procedural steps for the design process.

1. Sales Reps hand off new projects to the PM upon contract acceptance.
 - a. Create the project folder.
 - b. Change Open Solar status from “Selling” to “Installing” to notify Designer and PM.
 - i. Zoho status should automatically change from “Site Survey” to “Design”.
 - c. Email a link to the new project folder to the Designer and PM.
2. PM schedules site visit within two days of new project start.
 - a. The site visit should be executed within 7 days from project start.
3. PM completes site visit and hands-off project to design.
 - a. PM uploads site visit eval to the Project folder. [Photos>Site Visit Photos]
 - b. PM notifies the Designer and Sales Rep within two days of site survey.
 - i. Update Zoho, Site Survey Complete date box. 

4. The Designer provides a site survey recap to the PM and Sales Rep within 48 hours of site survey.
 - a. The site eval recap compares the site visit eval with the as-sold layout to document the site status and condition in order to note any anomalies that may institute a contract change, additional work, or major layout change.
 - i. Proposal / budgeting issues
 - ii. Electrical
 - iii. Roof considerations
 - iv. Layout considerations
 - v. Etc.
 - b. The primary focus for these considerations are items that are in conflict with the contract that will require a change order.
 - i. The Designer may identify missing details that require additional site visits.
 - ii. The Designer may provide solutions or produce a design to resolve conflicts.
 - c. The PM and Designer will repeat the site survey and site survey recap process as necessary to resolve potential conflicts.
 - d. The Designer completes the site survey recap.
 - i. Update Zoho, Site Survey Recap Complete date box.
5. The Designer determines the design route. The design route is based on a judgement call made by the Designer based on the complexity of the project and the design queue status. They will consider ease of work, permitting and AHJ timing, priority, efficiency, and cost.
 - a. Internal simple design rule of thumb
 - i. These are cookie cutter systems that are simple enough to be made using existing templates.
 - b. External/third-party design rule of thumb
 - i. These are somewhat complicated designs that cannot be made using existing templates.
 - c. Internal engineered design rule of thumb
 - i. These typically include complicated designs/layouts, multiple site visits, extensive details, and prolonged processing.
6. The Designer oversees the design development. They will review and revise as necessary until the plans pass internal and customer reviews.
 - a. Internal designs
 - i. They will develop and complete internal-designed plans.
 - b. External/third-party
 - i. They will review external designed plans.
 - ii. They may request revisions.
7. The Designer uploads completed plans to the project folder. [Design > Final Design Docs]
 - a. Site plan
 - b. 3-line diagram
 - c. Labels sheet
 - d. Plan set
8. The Designer notifies the PM and Sales Rep of completed plans ready for customer review.

- a. They will update Zoho, Design Completed date box.
9. The PM contacts the customer by email for plan approval.
 - a. Upon customer approval, notify SC and material take-off specialist.
 - i. Update Zoho, Customer approval, Yes approved status.
 - ii. Update Zoho, Final Plans Approved by Customer date box.
 - b. Upon customer rejection, plans are returned to Designer for revisions to restart the design development and review process.
 10. The Material take-off specialist begins initial procurement.
 - a. Material take-off specialist uploads solar & electrical BOMs to customer folder. [Document Install Side]
 - b. Material take-off specialist notifies warehouse manager of special-order components. Upload special order items to project folder. [Document Install Side]
 11. The SC applies for and secures permits and utility approval. SC will resolve issues as necessary to obtain approved permits.
 - a. AHJ See SOP-RO-002
 - b. Utility See SOP-RO-003
 - c. HOA
 12. The SC hands off approved permits to the team.
 - a. Upload approved permits and utility approval to the project permitting folder.
 - b. Notify PM, WM, and Designer of approved permits and utility approval.
 - i. Update Zoho, Permit Issued date box.
 - ii. Update Zoho, Utility Application Approved date box.

END DESIGN/PERMITTING PROCESS.

These are the next major steps in the project following design and permitting.

1. Material procurement
 - a. The WM orders major components and specialty items upon permit approval. See SOP-RO-001
 - b. The WM procures and stages job material according to the installation schedule, ideally 3 weeks in advance of the installation.
 - c. WM confirms balance of system (BOS) materials are in stock.
2. Scheduling
 - a. The PM schedules necessary inspections and events upon approved permits.
 - i. Blue-stake with Arizona 811.
 - ii. Power kill with the utility and customer.
 - iii. System installation with the customer.

4. Definitions and Acronyms

Definitions:

- **Bill of materials:** The document that summarizes the general materials that are not specific to a project. These are typically bulk items that are stocked in the warehouse. BOM can also include specialty items that need to be sourced uniquely.
- **Project specific materials:** These are the large, big-ticket materials specific to a project. These are typically items like modules and inverters.
- **Balance of system:** The remaining parts (nuts and bolts) and equipment required beyond project specific materials (modules, inverters, racking).
- **Site visit:** The first site visit by the Sales Rep to gather initial basic information for their proposal. This visit is typically cursory and lacks the depth and detail needed for the design team.
- **Site survey:** The Site survey is done to gather detailed data intended to inform the technical design of the customers solar system. This site visit is coupled with a site eval that the visiting employee assembles and provides to the design team via the project folder. The site survey eval is the set of photos and dimensional drawings with notes that the PM provides to design. These photos, drawings, and notes are gathered during the site visit.
- **Site survey recap:** The site eval recap is the summary of findings that design finds during their review and comparison of the site eval and the contracted solar system. This is provided to the PM and Sales Rep to inform/warn of any potential contract conflicts and necessary changes.

Acronyms:

- **PM:** Project Manager
- **WM:** Warehouse Manager
- **SC:** Service Coordinator
- **AHJ:** Authority Having Jurisdiction
- **HOA:** Home Owners Association
- **BOS:** Balance of system
- **BOM:** Bill of materials

5. Appendices, Documentation, and References

- [SOP-RO-001 Resi Project Material Management](#)
- [SOP-RO-002 AHJ permit app push-through.](#)
- [SOP-RO-003 Utility app push-through](#)

6. Revision History

1. Version 1:
 - a. Primary contributor: Kevin Flaws | Designer
 - b. Author: Rio Astiz
 - c. Approval Date:
 - d. Approver: Adam Doiron
 - e. Changes
 - i. Finalized document.